

PROCEEDINGS OF THE TENNESSEE ACADEMY OF SCIENCE 1996

Sarah H. Swain, Secretary TAS

Middle Tennessee State University, Murfreesboro, Tennessee

TAS EXECUTIVE COMMITTEE MEETING

19 April 1996

The Executive Committee meeting of the Tennessee Academy of Science was called to order by President David H. Kesler at 6:20 PM in Conference Room 336, Avon Williams Complex, Tennessee State University, Nashville, Tennessee, 19 April 1996. Members present were David H. Kesler, President; Diane Nelson, Past President; Michael L. Daley, President-elect; Sarah H. Swain, Secretary; John W. Harris, Treasurer; Jack Rhoton, Director of Junior Academy; Linda Jordan, State Department of Education Science Supervisor; Martha Weller and Darlene Loprete, Members-at-large; Bruce Conn, Local Arrangements Committee Chairman. President Kesler introduced new Executive Committee member Darlene Loprete, Member-at-large from Rhodes College.

Minutes of the 16 November 1995 Executive Committee meeting had been mailed by Secretary Sarah H. Swain to Committee members prior to the meeting. A motion for the approval of the minutes was approved.

REPORTS FROM OFFICERS AND DIRECTORS

President-elect Michael Daley reported on the plans for the 1997 annual meeting to be held 22 November 1997 at The University of the South, Sewanee, Tennessee. A poster session is planned in addition to paper sessions. Student participation is encouraged. Local Arrangements Chairman Bruce Conn provided meeting details. A list of area hotels and other pertinent information prepared by Chairman Conn will be included in the call for papers to be mailed this summer by Secretary Swain.

Treasurer John W. Harris presented the following 15 April 1996 report:

CASH BALANCE - July 1, 1995 \$43,447.40

RECEIPTS

Membership Dues	\$8,950.00
Institutional Sustaining Memberships	5,000.00
Library Subscriptions	2,610.00
Interest Earned, Trans Financial Bank	462.85
Dividends Earned, J.C. Bradford Money Market	899.61
Dividends Earned, J.C. Bradford Treasury Notes (Life Members Fund)	368.75
Dividends Earned, Vanguard Trust Fund	2,142.59
Journal Page Charges	4,302.00
Contributions	679.00
Registration and Banquet Fees	3,320.00
<b>TOTAL RECEIPTS</b>	<b>28,632.80</b>

TOTAL CASH AVAILABLE \$72,080.20

DISBURSEMENTS

Journal Printing Costs	\$ 7,830.93
Tennessee Junior Academy of Science Annual Meeting	4,389.85 2,708.42
Board Meeting Expenses	601.14
Treasurer's Expenses	1,557.12
Secretary's Expenses	437.88
Student Research Grants	944.21
TAS Banner	107.17
AAAS Annual Meeting	232.03
Annual Dues and Dues	142.50
Auditor's Fee	875.00
<b>TOTAL DISBURSEMENTS</b>	<b>19,826.25</b>

CASH BALANCE - April 15, 1996 \$52,253.95

Receipts	\$28,632.80
Disbursements	19,826.25
Cash Increase	8,806.55

BREAKDOWN OF HOLDINGS

U. Memphis Account (Journal)	\$ 849.55
U.S. Postal Service, Memphis	594.85
TTU Account	363.31
Checking Account, Trans Financial Bank	2,044.19
Savings Account, Trans Financial Bank	23,287.25
Money Market Fund, J. C. Bradford	25,114.80

TAS HOLDINGS as of April 15, 1996 \$52,253.95

TJAS TRUST FUND (Vanguard Star Fund)  
(6,538.584 shares owned as of 3/31/96)

Account Value 9/30/95	\$ 95,290.60
Deposits (Capital Gains Reinvested)	3,528.97
Disbursements (Dividend Distributions) 12/31/94	2,142.59
Account Value as of 12/31/95	98,209.53
Account Value as of 3/31/96	101,674.98

LIFE MEMBERS TRUST FUND (J. C. Bradford & Co.)  
(Ten 3-year U.S. Treasury Notes @\$1,000 each,  
Date of Issue: 11/15/94)

Value of Notes as of 9/31/95	\$10,288.00
Disbursement (Interest Income) 11/15/95	368.75
Estimated Annual Income	738.00
Value of Notes as of 12/31/95	10,378.00
Value of Notes as of 3/31/96	10,247.00

TOTAL VALUE OF HOLDINGS as of April 15, 1996 \$164,175.93

Treasurer Harris pointed out that no funds had been used in the past two years for the Visiting Scientist Program (VSP), administered by Oak Ridge Associated Universities (ORAU). President Kesler will contact ORAU VSP administrators to discuss the future administration of the program.

#### RECOMMENDED BUDGET FOR 1996-1997

Secretary	\$ 500.00
Treasurer	1,500.00
Junior Academy	6,000.00
Visiting Scientist Program	5,000.00
Journal	12,000.00
Research	2,500.00
Annual Meeting	2,000.00
Collegiate Division Meeting	1,200.00
Board Meetings	750.00
AAAS	500.00
Audit Fee	875.00
Annual Dues/Fees	150.00
Insurance Bond	100.00
<b>TOTAL</b>	<b>\$33,075.00</b>
Proposed Capital Expenditure (Computer and Software)	\$3,500.00

A motion to accept the Treasurer's Report and the Recommended Budget for 1996-1997 was approved. The Executive Committee discussed ways to increase the number of requests for research funds which are often unused. A notice will be placed in the *Journal* advertising the availability of TAS funds for research by high-school students. Linda Jordan, State Department of Education Science Supervisor, will notify school systems by mail. Information about the research funds will be made available to high-school science teachers through the Tennessee Science Teachers Association annual meeting registration packet and by a letter from Jack Rhoton, TAS Director of the Junior Academy. The possibility of pooling Research and Junior Academy funds was discussed. A motion to transfer funds, \$2,500, from Research to Junior Academy was approved, contingent upon the status of Research Committee funding at this time.

The following report was submitted by Managing Editor, Phyllis Kennedy: "Since November 1995, volumes 70(3-4) and 71(1) of the *Journal of the Tennessee Academy of Science* were printed and mailed. The combined issue 70(3-4) consisted of 40 pages and was printed at a total cost of \$2971.18. Three articles and abstracts of the Spring 1995 Collegiate Division meetings were published in the issue. The first issue of volume 71 consisted of 28 pages and was printed at a total cost of \$2488.21. The Presidential address, the minutes of 1995 Executive Committee and Annual Business meetings, list of registered TAS attendees of the 1995 annual meeting (joint meeting with Kentucky Academy of Science), abstracts of TAS presentations at the 1995 annual meeting, and list of new members were printed in 71(1). A detailed breakdown of expenses and charges for each issue is available from the Managing Editor (and Treasurer).

Currently, there is only one manuscript ready for publication. Therefore, 71(2) will be published when there is a sufficient number of accepted manuscripts (or other items).

A total of 18 manuscripts was submitted in 1995 (processing completed for seven), and eight manuscripts have been submitted to date in 1996. For comparison, I note that 15 manuscripts were submitted in 1993 (processing completed for all 15) and six in 1994 (processing completed for four). Most manuscripts not completely processed are in

the author-revision stage.

The Managing Editor submits for approval by the Executive Committee the following nominee as Microbiology Section Editor: Dr. Anthony Newsome, Department of Biology, Middle Tennessee State University, Murfreesboro, Tennessee."

The Managing Editor's recommendation to accept Dr. Anthony Newsome as Microbiology Section Editor was approved by a vote of the Executive Committee.

Jack Rhoton, Director of the Junior Academy, presented the following report: "The 1996 spring meeting is scheduled for Friday, April 19, at Pearl-Cohn High School in Nashville. A total of twenty-five students have been invited to present their research papers. This year we received forty-seven papers from seventeen schools. Nineteen teachers sponsored one or more students.

Three of the 1995 TJAS winners presented their papers at the American Junior Academy of Science Conference in Baltimore, MD, during the week of February 8-13, 1996. Matthew F. Rose, Memphis University School, presented a paper entitled, "Circadian and Hormonal Regulation of Growth and Metamorphosis in *Xenopus laevis*: Phases IV, V, and VI". Emmanuel Chang, Martin Luther King Magnet High School, Nashville, presented his work on "Distribution of Nitric Oxide in Hypotensive and Hypertensive Mice Brain". Arjun Dirghangi, Memphis University School, presented his paper entitled, "Mapping of the Incisor Tooth Representation in Somatosensory Cortex of the Adult Rat".

During the April 19 meeting, a framed certificate and a small honorarium will be presented to an outstanding secondary science teacher from each region of the three grand divisions of the state. The recipients of this year's awards are as follows: Betty C. Davis (Biology), University High, Johnson City; Linda B. Rye (Chemistry), Waverly Central, Waverly; Spurgeon J. Smith (Chemistry, Biology, Physics), Jackson Central-Merry High, Jackson.

These TAS Distinguished Teacher Awards recognize teachers for their outstanding contribution to science education and for stimulating and inspiring students to an active interest in science. This year the Awards Committee received seventeen nomination packets."

No report was submitted by the Director of the Visiting Scientist Program.

Collegiate Division regional meetings are being held during April. Richard Raridon, Director, will submit a report of these meetings in November. Gary Litchford, The University of Tennessee at Chattanooga, will put information about the Collegiate Division on the TAS Web Page.

Dr. Richard Raridon serves as TAS representative to the National Association of Academies of Science (NAAS). He also represents NAAS as a member of the American Association for the Advancement of Science (AAAS) Council. Dr. Raridon attended the AAAS/NAAS annual meeting held in Baltimore, Maryland, February 8-13, 1996. TAS is affiliated with AAAS through representation in Section Y, General Interest in Science and Engineering. Dr. Raridon reported that NAAS sponsored a workshop at the meeting which addressed some of the funding problems confronting local academies. Dr. J. G. Rodriguez of the Kentucky Academy of Science was chosen as NAAS President-elect. Next year's AAAS/NAAS meeting will be held in Seattle, Washington, February 13-18, 1997.

#### REPORTS FROM COMMITTEES

Michael L. Daley, Chair, reported on the activities of the TAS Journal Committee. Topics being considered by the committee include goals to maintain and build on the quality of the present journal and possible mechanisms for building on the present foundation. The journal committee has discussed the possibility of including solicited papers on a theme topic, and the pros and cons of sections on technical communi-

cation, education, and student papers. President Kesler asked Chairman Daley to present a summary of the committee's activities and concerns to the Strategic Planning Committee, George Murphy, Chair, for further discussion.

The Committee on Board Expansion, Martha Weller, Chair, will continue to consider various approaches for expanding board membership. The committee will work with the Strategic Planning Committee and present a report at the November meeting.

The Committee on Procedures and Operations, John W. Harris, Chair, is working to develop a manual which will provide guidelines for successors. Timetables and duties of officers will be included in the manual. All TAS board members, directors, and officers will detail their respective duties and submit these to Chairman Harris for assembly in a manual.

The Committee on Distinguished Scientist Award, Diane Nelson, Chair, proposed the following annual awards:

#### **Distinguished College/University Scientist Award**

##### **Qualifications:**

- a. The recipient shall have made some significant contribution to science teaching and particularly to academic research in Tennessee. Contributions should be interpreted broadly to mean contribution directly to the State of Tennessee, or to the improvement of the quality of life in the State, or to intellectual growth in the State.
- b. The recipient should be affiliated with a Tennessee college/university and shall be a member of TAS.

##### **Nomination packet should include:**

1. an abbreviated curriculum vitae (five pages or less) containing information pertinent to the award and a list of publications from the last 5 years,
2. documentation of special accomplishments as science teacher or academic researcher, and
3. letters of recommendation from no more than five professional colleagues well acquainted with the candidate's qualifications.

#### **Industrial Scientist Award**

##### **Qualifications:**

- a. The recipient shall have made some significant contribution to industrial science in Tennessee. Contribution should be interpreted broadly to mean contribution directly to Commerce or Industry or the improvement of the quality of life in the State.
- b. The recipient shall be a member of TAS.

##### **Nomination packet should include:**

1. an abbreviated curriculum vitae (five pages or less) containing information pertinent to the award and a list of publications from the past 5 years,
2. documentation of special accomplishments as an industrial scientist, and
3. letters of recommendation from no more than five professional colleagues well acquainted with the candidate's qualifications.

#### **Distinguished College/University Teacher Award**

##### **Qualifications:**

- a. The recipient shall have made some significant contribution primarily to science teaching but also to research at the college/university level in Tennessee. Contribution should be interpreted broadly to mean

contribution directly to the State, or to the quality of life in the State, or to intellectual growth in the State.

- b. The recipient should be a resident of Tennessee and shall be a member of TAS.

##### **Nomination packet should include:**

1. an abbreviated curriculum vitae (five pages or less) containing information pertinent to the award and a list of publications from the past 5 years,
2. documentation of special accomplishments as a teacher of science, and
3. letters of recommendation from no more than five professional colleagues well acquainted with the candidate's qualifications.

#### **Distinguished Secondary School Science Teacher Award**

##### **Qualifications:**

- a. The recipient shall have made some significant contribution to the teaching of science at the middle- and high-school level in Tennessee. Contribution should be interpreted broadly to mean contribution to the academic welfare and intellectual growth of secondary students of the State, contribution directly to the State, or to the quality of life in the State.

##### **Nomination packet should include:**

1. a current curriculum vitae which addresses the professional background, experience, and development of the candidate;
2. documentation of special accomplishments as a teacher of science, especially measures of student success, participation in student development beyond the classroom, and science curriculum development;
3. a brief summary of nominee's philosophy of science teaching; and
4. a letter of recommendation from an administrator or supervisor, a teaching colleague, a student, and a parent, not to exceed five letters.

Separate motions to accept each award were approved. Committee chair, Diane Nelson, will prepare an announcement of the awards for the *Journal*. Candidates would be approved at the April Executive Committee meeting and presented at the following November annual meeting. Distinguished Secondary Science Teacher Award would be presented at the annual November Tennessee Science Teachers Association (TSTA) meeting. Jack Rhoton, Director of the Junior Academy, agreed to handle details.

#### **OLD BUSINESS**

Secretary Sarah Swain presented a list of materials currently available for donation to the Tennessee State Archives. Executive Committee members were encouraged to help in the search for TAS documents. Any TAS members who could provide copies of annual meeting programs earlier than 1975, Junior Academy documents earlier than 1975, Collegiate Division documents earlier than 1984, Executive Committee minutes earlier than 1975, or other TAS items of historical interest, should send these to Sarah H. Swain, TAS Secretary.

President David Kesler presented a draft of a TAS promotional bulletin and pamphlet designed for use by members when soliciting institutional, industrial, or organizational memberships. These materials would provide accurate information regarding membership, benefits, dues, and activities of TAS.

Jack Rhoton, Director of Junior Academy, reported on progress made toward a possible joint meeting in 1998 with TSTA. TAS intent must be presented at the 27 April 1996 TSTA meeting. State Science Supervisor Linda Jordan will help Rhoton with contacts and planning.

President Kesler will contact Linda Roberson, Meeting Coordinator, to represent TAS at the April planning meeting.

#### NEW BUSINESS

The 1997 TAS annual meeting site is not yet determined. Contacts will be made by President Kesler to confirm a meeting site and date as soon as possible.

A Strategic Planning Committee has been established to evaluate TAS. The committee is composed of past presidents of TAS and will provide valuable appraisal of TAS policies and administration, financial status, membership trends, the *Journal*, activities and sponsored programs, service to the state, visibility, political involvement, etc. Committee members are George Murphy (MTSU), Chair, David Yarborough (TTU), Ben Stone (APSU), Michael Kennedy (UM), Andy Sliger (UTM), and Bernard Benson (UTC). The suggestions of the committee will be forwarded to the Executive Committee.

President Kesler expressed his concern regarding the role of TAS in public debate. In the absence of specific policy, a TAS President is uncertain when to speak, or not to speak, on public science issues. President Kesler suggested that a procedure be developed so that, if appropriate, the opinion of the Executive Committee could be expressed, perhaps through resolutions. Discussion on the matter will continue among Executive Committee members through electronic mail.

A motion to reimburse Junior Academy Director Jack Rhoton \$500 for expenses as TJAS representative to AAAS was approved. President Kesler expressed appreciation to Director Rhoton for his commitment to TJAS.

A motion to accept a proposal from Treasurer Harris for the purchase of a computer and software was approved. The amount of \$3995 was approved for the acquisition.

When Treasurer Harris sends membership renewal forms, members will be asked to grant permission to be included in a database on the TAS Home Page. No name will be included in the database without written permission.

Past President Diane Nelson read a letter of appreciation from David J. Wilson, a 1995 recipient of the Distinguished Service Award. Dr. Wilson, recently retired from Vanderbilt University, presently serves as Senior Research Fellow with Eckenfelder Inc., Nashville.

The April meeting of the 1996 TAS Executive Committee was adjourned by President Kesler at approximately 9:45 PM.

#### TAS EXECUTIVE COMMITTEE MEETING

21 November 1996

The 21 November 1996 meeting of the Tennessee Academy of Science (TAS) Executive Committee was called to order by President David H. Kesler at 6:45 PM CST in the Torian Room of the Dupont Library on the campus of The University of the South, Sewanee, Tennessee. Members present were David H. Kesler, President; Diane R. Nelson, Past President; Michael L. Daley, President-elect; John W. Harris, Treasurer; Sarah H. Swain, Secretary; Phyllis Kennedy, Managing Editor; Richard Raridon, Director of Collegiate Division; Jack Rhoton, Director of Junior Academy; Steven Murphree, Meeting Coordinator; Linda Jordan, Science Consultant, Tennessee Department of Education; Bruce Conn, Local Arrangements Committee Chairperson; and Edward D. Aebischer, Visiting Scientist Program representative. Dr. Eugene Kline attended as an observer.

Minutes of the 19 April 1996 Executive Committee meeting had been mailed by Secretary Swain to committee members prior to the meeting. A motion for the approval of the minutes passed.

Linda Jordan, Science Consultant, Tennessee Department of Education, discussed the development of a knowledge and skills document

as an effort by the Tennessee Department of Education to align K-12 with National Science Education standards. The document may be available to the TAS Executive Committee for review in April 1997. Also, a new introductory level high-school course in environmental science is being evaluated for possible pre-college science course status. Major course components will be evaluated by various focus groups across the state before a decision is made.

#### REPORTS FROM OFFICERS AND DIRECTORS

Treasurer Harris requested permission to donate the Apple IIGS computer no longer used by TAS. A motion to permit the donation, at the Treasurer's discretion, passed. The Treasurer's report follows:

#### TREASURER'S REPORT

15 November 1996

John W. Harris, Treasurer

CASH BALANCE - JULY 1, 1995	\$47,088.23
RECEIPTS	
Membership Dues	\$ 4,925.00
Institutional Dues	5,500.00
Library Subscriptions	1,200.00
Journal Sales	15.00
Interest Earned, Trans Financial Bank	140.42
Dividends Earned, J.C. Bradford Money Market	308.41
Journal Page Charges	1,565.50
Contributions	195.00
Annual Meeting Registration and Luncheon Fee	2,490.00
TOTAL RECEIPTS	16,339.33
TOTAL CASH AVAILABLE	\$63,427.56
DISBURSEMENTS	
Journal Printing Costs	\$2,764.79
Tennessee Junior Academy of Science	2,756.03
Annual Meeting	69.20
Treasurer's Expenses	152.62
Secretary's Expenses	529.07
Computer Insurance	185.00
TOTAL DISBURSEMENTS	6,456.71

CASH BALANCE - November 15, 1996	\$56,970.85
Receipts	\$16,339.33
Disbursements	6,641.71
Cash Increase	9,697.62

#### BREAKDOWN OF HOLDINGS

U. Memphis Account (Journal)	3,488.12
U.S. Postal Service, Memphis	352.76
TTU Account	249.06
Checking Account, Trans Financial Bank	5,428.95
Savings Account, Trans Financial Bank	20,740.22
Money Market Fund, J. C. Bradford	26,711.74

TAS HOLDINGS as of November 15, 1996 \$56,970.85

#### TJAS TRUST FUND (Vanguard Star Fund)

(6,538.584 shares owned as of 9/30/96)	
Account Value as of 3/31/96	\$101,674.98
Deposits (Capital Gains Reinvested)	0.00

Disbursements (Dividend Distributions)	
6/30/96	1,634.65
Account Value as of 6/30/96	102,590.38
Account Value as of 9/30/96	105,728.90

LIFE MEMBERS TRUST FUND (J. C. Bradford)  
(Ten 3-year U.S. Treasury Notes @ \$1,000 each,  
Date of Issue - 11/15/94)

Value of Notes as of 3/31/96	\$10,247.00
Disbursements (Interest Income)	
5/15/96	368.75
Estimated Annual Income	738.00
Value of Notes as of 6/30/96	10,178.00
Value of Notes as of 9/30/96	10,159.00

TOTAL VALUE OF HOLDINGS as of November 15, 1996 \$172,858.75

Treasurer Harris also presented an audited report, which appears elsewhere in these proceedings, along with the auditor's report. The reports were accepted by a motion passed unanimously.

Managing Editor, Phyllis Kennedy, presented the following report: "Since the 1995 Annual Meeting of the Tennessee Academy of Science, 70(3-4), 71(1), and 71(2) of the *Journal of the Tennessee Academy of Science* were printed and mailed. These issues consisted of 40, 28, and 28 pages, respectively, and were printed at a cost of \$2971.18, \$2488.21, and \$2457.71, respectively. Seven manuscripts were published within these issues, generating \$3810.00 in page charges.

Currently, there are abstracts from the 1996 Collegiate Division meetings and two manuscripts ready for publication. Issues 3 and 4 of volume 71 will be published when sufficient material is available for each issue.

A total of 19 manuscripts has been submitted to the *Journal* thus far in 1996. Fields of study represented by these submissions are botany, chemistry, geology and geography, microbiology, science and math teachers, and zoology." The editor's report was accepted.

The Director of the Junior Academy, Jack Rhoton, presented the following report: "The 1996 spring meeting of the Tennessee Junior Academy of Science (TJAS) was held on Friday, April 19, at Pearl Cohn Comprehensive High School in Nashville. A total of forty papers was submitted from fifteen schools and twenty-four were selected by a panel of readers to be presented at the annual meeting. The top two presenters at the annual meeting were Pragati Singh, Martin Luther King Magnet School, Nashville, and Matthew F. Rose, Memphis University School, Memphis. The title of Ms. Singh's paper was "Cloning and Functions Characterization of the Upstream Sequence of a Metalloproteinase Gene of *Leishmania*." "Cellular Localization of Kallikrein in R-Cognin and Melatonin Effects of Embryonic Chick Retinal Cell Aggregation" was the title of Mr. Rose's paper. Both papers were published in the 1996 *Handbook and Transactions of the Tennessee Junior Academy of Science*, along with the three other papers of the top five winners. The *Handbook* was sent to all high school science and math departments as identified in the *Tennessee State Department of Education's Directory of Public Schools, Approved Non-Public and Special Schools*.

Four of the TJAS winners have been invited to present their papers at the American Junior Academy of Science (AJAS) Conference in Seattle, Washington, during the week of February 12-16, 1997. The purpose of the AJAS is very similar to the TJAS in that it provides an annual program of scientific atmosphere and stimulation for capable young students. It is comparable to scientific meetings of adult scientists. The AJAS provides another avenue for encouraging students in the area of science.

Three outstanding science teachers were recognized at the April 19 Junior Academy meeting. The three teachers honored were as follows: Betty C. Davis (biology), University High School, Johnson City; Linda B. Rye (chemistry and physics), Waverly Central High School, Waverly; and Spurgeon Smith (biology and chemistry), Jackson Central-Merry High School, Jackson. Each received a framed certificate and a check in the amount of \$100. We are indebted to the Tennessee State Department of Education for selecting these outstanding teachers.

Efforts continue to be made to disseminate information more widely concerning TJAS and to bring the program to the attention of more teachers in the state. In addition to disseminating TJAS information via the *Handbook*, it was also described in the *Sciencing Quarterly* and sent to 2000 teachers and schools in the state. Information about TJAS was shared with teachers of the Tennessee Science Teachers Association. Also, a TJAS session is scheduled for the 1996 TAS Annual Meeting in Sewanee on November 22, 1996.

#### TJAS REQUEST FOR FUNDING

Eleven high school students have requested research grants to assist their efforts in developing research projects for the TJAS program. Each student has presented a sound description of the project: general purpose and goals, statement of need, and the nature of the research. The following students have requested funding:

<u>Student</u>	<u>Title of Research</u>	<u>Amount</u>
Melanie Bean	Fruit as an Antibiotic	\$200
Eric Brantley	The Decomposition of Trichloroethylene in Clay Using Electro-osmosis	\$200
Emmanuel Chang	The Mathematical Modeling of In Situ Soil Vapor Extraction of Soil Decontamination	\$300
Elizabeth Chang	The Effects of Staphylococcal Enterotoxin B (SEB) on Splenic Macrophages	\$250
Christine Donhardt	The Effects of Grapefruit on the Second Instar Larvae of the Colorado Potato Beetle: A Two Year Study	\$300
Esther Gerlach	Radio Emissions of Heavenly Bodies	\$297
Chris Hall	Eggplant as a Hidden Medicine: A Study of Modern Holistic Medicine	\$70
Scott McKinnon	A Study of the Efficiency of Different Octane Gases	\$50
Ashleigh Miller	Radio Emissions of Heavenly Bodies	\$300
Chetan Patil	Characterization of <i>Acetobacter diazotrophicus</i> , a Nitrogen-fixing Bacterium in Non-leguminous Plants	\$300
Ryan Schultz	The Benefits of Using Creatine Monohydrate to Improve Weightlifting and to Build Muscle Strength	\$250

I recommend that the TAS Executive Board approve the funding request made by each student. (The total amount requested for all projects is \$2517.)"

The Director's report was accepted. A motion to fund \$2517.00 for student research projects and up to \$800.00 for travel to AJAS Conference was approved.

In the absence of Linda Cain, Director, Visiting Scientist Program (VSP), Edward D. Aebischer, Senior Manager, Office of University and Science Education, Oak Ridge National Laboratory (ORNL), discussed the status of VSP with the Executive Committee. Oak Ridge Associated Universities (ORAU), the original VSP co-sponsor with TAS, is no longer active in pre-college science education. ORNL Office of University and Science Education is willing to assume administrative responsibilities for VSP. The goal of ORNL's Office of Science Education is to develop and strengthen mathematics and science education and to help fulfill the objective of the U.S. Department of Energy (DOE) Science Education Enhancement Act of 1990. The focus of DOE-sponsored educational and research outreach programs is on inquiry-based, "hands-on" learning and research experiences for students and teachers. TAS will continue to fund the Visiting Scientist Program at \$5000 per year, as in the past, and ORNL will match that contribution. Dr. Aebischer reported that several hundred copies of the most recent VSP roster (1994) were distributed at the 1996 Tennessee Science Teachers Association annual meeting. Executive Committee members and Dr. Aebischer agreed that a revitalized and successful Visiting Scientist Program would require contact and cooperation between ORNL and TAS.

Collegiate Division Director, Richard Raridon, presented the following report: "The Western Regional Meeting was held at the University of Tennessee at Memphis on 30 March 1996. Twenty-nine papers were presented by students representing fifteen schools. The Eastern Regional Meeting was held at Mississippi State Technical Community College on 19 April 1996. Nineteen papers were presented by students from nine schools. The Middle Regional Meeting was held at Austin Peay State University on 20 April 1996. Twenty-six papers were presented by students from five schools. The regional sponsors are Dr. Fred Matthews, Austin Peay State University, Dr. Gary Litchford, the University of Tennessee at Chattanooga, and Dr. Charles Biggers, the University of Memphis." The director's report was accepted.

#### REPORTS FROM STANDING COMMITTEES

*Auditing Committee:* (report presented by committee chairperson, Eugene Kline) "The Audit Committee consisting of Dr. David Yarborough, Dr. R. K. Fletcher, and myself as Chair, had an audit as required by the Academy for the year ending June 30, 1996 prepared by Mr. James F. McKinnie, MBA, Cookeville, TN. He examined the receipts and disbursements records and found everything in order and the accounting system well maintained. The Committee recommends approval of the financial report based upon this audit. The Committee also wishes to commend Dr. John Harris, Treasurer, for his efforts and meticulous job in keeping good financial records for the Academy."

#### TENNESSEE ACADEMY OF SCIENCE Cash Receipts and Disbursements For Year Ended June 30, 1996

##### Receipts

Membership Dues	\$15,040.00
Journal Page Charges	4,272.00
Dividends - Vanguard	3,777.24
Capital Gains - Vanguard	3,528.97

Annual Meeting Fees	3,230.00
Library Subscriptions	2,640.00
Interest Earned	2,545.00
Contributions	697.00
<b>Total Receipts</b>	<b>\$35,730.21</b>

##### Disbursements

Printing and Publications	\$8,461.26
Tennessee Junior Academy of Science	7,313.86
Computer	3,995.00
Annual Meeting	2,708.42
Treasurer's Office Expense	2,068.99
Accounting Fee	875.00
Research Grants	867.00
Board Meeting	651.54
Collegiate Division	650.00
Secretary's Office Expense	437.88
AAAS Expenses	232.03
Annual Dues and Fees	142.50
Insurance Bond	100.00
Miscellaneous	107.17

**Total Disbursements** \$28,610.65

Cash Increase from Operations \$7,119.56

Cash Balance, July 1, 1995 \$144,013.33

J. C. Bradford - Unrealized Loss [\$147.00]

Vanguard - Unrealized Gain \$8,820.48

**Cash Balance, June 30, 1996** **\$159,806.37**

#### TENNESSEE ACADEMY OF SCIENCE Summary of Cash Accounts June 30, 1996

##### Trans Financial Bank Cookeville, TN 38501

NOW Account	\$ 3,527.67
Savings Account	13,741.48
<b>Total</b>	<b>\$17,269.15</b>

##### Tennessee Technological University Cookeville, TN 38505

Agency Account \$351.44

##### University of Memphis Memphis, TN 38152

Agency Account \$2,545.83

##### Vanguard Financial Center Valley Forge, PA 19482-2600

Vanguard Star Fund \$102,590.38

U.S. Postal Service  
Memphis, TN 38100

Postage Account 468.24

J. C. Bradford & Co.  
Cookeville, TN 38501

Cash Account \$26,403.33

United States Treasury Note 10,178.00

Total \$36,581.33

Cash Balance, June 30, 1996 \$159,806.37

A motion to accept the report was approved.

*Fellows Committee:* The following report was submitted by the Fellows Committee, S. K. Ballal, Chairman: "The Fellows Committee of the Tennessee Academy of Science wishes to place in nomination the following members of the Academy: Dr. Gary Litchford, Department of Biology and Environmental Sciences, University of Tennessee at Chattanooga; Dr. Ted S. Lundy, Director, Manufacturing Center, Tennessee Technological University; Dr. Richard E. Bergenback, Department of Physics, Geology, and Astronomy, University of Tennessee at Chattanooga. These three members are in good standing, and they have greatly fulfilled the requirements to be elected as Fellows of the Tennessee Academy of Science." A motion to accept the nominations and to present the nominees to the membership at the 1996 annual business meeting was approved.

*Membership Committee:* Dr. D. M. S. Bhatia, Chairman of the Membership Committee, submitted a report that stated that, during 1995, the TAS membership increased by 112 members. As of the date of the committee report, 11 November 1996, 79 new members had been added during 1996. Dr. Bhatia predicted additions to that number during the registration for the 1996 annual meeting. The report was accepted.

*Necrology Committee:* Chairperson William E. Solomons reported the deaths of members Paul Wishart and James J. Friauf. The death of Jimmie Chandler, wife of member Clay Chandler, also was noted. The secretary will express sympathy, on behalf of TAS, to the families of these deceased members.

*Nominating Committee:* Chairperson Diane Nelson and the members of the Nominating Committee submitted the following nominees for 1997 officers of the Tennessee Academy of Science: Eugene Kline, Tennessee Technological University, President-elect; John W. Harris, Tennessee Technological University, Treasurer; Sarah H. Swain, Middle Tennessee State University, Secretary. A motion to approve the nominees and to present them to the membership at the 1996 annual business meeting passed.

*Research Committee:* No report was submitted by this committee.

*Resolutions Committee:* A Resolution in Support of Freedom of Academic Expression was presented by the committee, Betty Davis, Chairperson. Following a discussion of the need for rewording, the Executive Committee approved a motion to table the resolution. A Resolution of Appreciation was approved by vote of the Executive Committee and will be presented to the membership for approval at the 1996 annual business meeting.

#### REPORTS FROM AD HOC COMMITTEES

Journal Committee Chairperson, Michael L. Daley, discussed the feasibility of the publication of invited papers. President Kesler charged the Journal Committee to establish the criteria for invited papers as a special *Journal* section and to organize efforts to determine topics and locate contributors.

Board Expansion Committee did not submit a report.

The Committee on Procedures and Operations, chaired by Andy Sliger, is preparing a duties manual for TAS officers and Executive Committee members. Treasurer Harris, a committee member, reported that the manual is expected to be available to the Executive Committee at its 1997 April meeting.

A report from the Committee on Distinguished Scientist Awards was presented by Chairperson Diane R. Nelson. The following award categories will be announced at the annual business meeting: Distinguished College/University Scientist Award, Industrial Scientist Award, Distinguished College/University Teacher Award, and Distinguished Secondary School Science Teacher Award. Nominations will be received and considered at the April Executive Committee meeting. Announcement of the awards, with descriptions of criteria for each award, will be published in the *Journal*. The committee to consider nominations will be composed of TAS Past President, President, and President-elect.

The Strategic Planning Committee expects to report to the Executive Committee at its April 1997 meeting. The committee is composed of past presidents of TAS and has been established to evaluate TAS policies, administration, financial status, membership trends, the *Journal*, activities and sponsored programs, service to the state, visibility, and political involvement. Committee members are George Murphy, Middle Tennessee State University, Chair; David Yarborough, Tennessee Technological University; Ben Stone, Austin Peay State University; Michael Kennedy, The University of Memphis; Andy Sliger, The University of Tennessee at Martin; Bernard Benson, The University of Tennessee at Chattanooga.

#### OLD BUSINESS

At the request of the State Archivist at the Tennessee State Archives, President Kesler has given approval to classify all TAS materials as donated. Secretary Swain continues to compile TAS documents not previously donated to the Tennessee State Archives (TSA) in an effort to establish a complete set of TAS documents in the TSA. A call to the membership for "missing" items will be published in the *Journal*.

President Kesler presented an informational flier for use in membership solicitation. President Kesler announced that The University of the South at Sewanee and Rhodes College in Memphis are recent additions as TAS Institutional Members. The successful enlistment of the Tennessee Independent Colleges and Universities (TICU) as an affiliated society of TAS was due to the efforts of President Kesler.

The meeting site for the 1997 TAS annual meeting will be Motlow State Community College, Tullahoma. Richard Gross will serve as Local Arrangements Chairperson. Site plans for the 1998 annual meeting remain incomplete. Discussion continues with the Tennessee Science Teachers Association for a possible joint meeting in Nashville; however, if scheduling conflicts remain unresolved, different mid-state meeting arrangements may need to be considered. The University of Tennessee at Martin has invited TAS to its campus for the 1999 annual meeting.

#### NEW BUSINESS

President Kesler announced the formation of an Education Committee to consider science education issues in Tennessee, to serve as a resource to the State Department of Education, and to be responsible for oversight of the Visiting Scientist Program. Bernard Benson, The University of Tennessee at Chattanooga, will serve as chairperson. The chairperson will select committee members from as many scientific disciplines as possible. A motion to approve the establishment of the Education Committee was approved.



The search for a Managing Editor of the *Journal* continues. Current Managing Editor Phyllis Kennedy will continue to serve for the next 6 months. Managing Editor Kennedy has recommended that TAS seek a contract with Allen Press to reduce demands on the Managing Editor. President Kesler and Managing Editor Kennedy will request current cost estimates from Allen Press and report the information to the Executive Committee.

Revisions to the TAS membership form, to include a permission statement for individual listing in the TAS Web Page Directory, were discussed. President Kesler will distribute a revised form to the Executive Committee members at a future date.

The 21 November 1996 meeting of the Executive Committee of the Tennessee Academy of Science was adjourned by President Kesler at 10:20 PM CST.

## THE ONE HUNDRED SIXTH MEETING OF THE TENNESSEE ACADEMY OF SCIENCE

21-22 November 1996

The University of the South, Sewanee

The annual meeting of the Tennessee Academy of Science was held on the campus of The University of the South, Sewanee, Tennessee, 21-22 November 1996. Dr. Bruce Conn served as chairperson of the Local Arrangements Committee. Dr. Michael L. Daley, President-elect, served as Program Chairperson.

The Executive Committee meeting was held Thursday evening, 21 November 1996, in the Torian Room of the Dupont Library on The University of the South campus. The general session, business meeting, luncheon, and section meetings were held on The University of the South campus on Friday, 22 November 1996. The general session began at 8:45 AM CST in Cravens Hall with a welcome from President-elect Michael L. Daley. Local Arrangements Chairman Bruce Conn welcomed the TAS membership to The University of the South. Following the annual business meeting, the plenary session began with a presentation by Dr. George Webb, Tennessee Technological University, entitled "Theory and the Public Understanding of Science: Reflections on the Evolution Controversy in America." Attendees could view posters displayed in Cravens Hall throughout the morning. Lunch was served to participants at the Sewanee Inn, followed by afternoon technical sessions that convened in Woods Laboratories and Walsh-Ellet Hall as listed in the printed program.

## ANNUAL BUSINESS MEETING

22 November 1996

President David Kesler called to order the annual business meeting of the Tennessee Academy of Science and determined by the attendance that a quorum was present. Treasurer John W. Harris presented the Treasurer's report. The Managing Editor's report was presented by *Journal* Managing Editor Phyllis Kennedy. President Kesler explained that Managing Editor Kennedy would soon retire from the position and that applications for the position were being accepted. He thanked Managing Editor Kennedy for her years of dedication to the *Journal*.

Director Jack Rhoton presented a report on the activities of the Junior Academy of Science and Director Richard Raridon reported on the Collegiate Division meetings of 1996. The Audit Committee report, read by President Kesler, documented the financial stability of the Academy.

On the recommendation of the Fellows Committee, and with the approval of the Executive Committee, a motion was passed to designate the following members as Fellows of the Academy: Dr. Gary Litchford,

The University of Tennessee at Chattanooga; Dr. Ted S. Lundy, Director, Manufacturing Center, Tennessee Technological University; Dr. Richard E. Bergenback, Department of Physics, Geology, and Astronomy, The University of Tennessee at Chattanooga.

The Membership Committee reported 112 new members for 1995 and 79 new members in 1996 prior to the annual meeting date. A motion was passed to accept the new members whose names are printed in the January 1996 issue of the *Journal*. A motion to suspend the reading of the names passed. A moment of silence was observed in remembrance of TAS members Paul Wishart and James J. Friauf, and Jimmie Chandler, wife of TAS member Clay Chandler.

The slate of officers presented by the Nominating Committee, and approved by the Executive Committee, was read by President Kesler as follows: Eugene Kline, President-elect; John W. Harris, Treasurer; Sarah H. Swain, Secretary. A motion to accept the slate was approved.

The new Distinguished Scientist Awards were explained by Diane Nelson. Nominations should be sent to David Kesler, Rhodes College, by 1 April for consideration by the Executive Committee in its April 1997 meeting.

The following resolution, prepared by the Resolutions Committee, was accepted by motion:

"WHEREAS, the Tennessee Academy of Science is enjoying a most pleasant, profitable, and well organized series of meetings at the University of the South, and

WHEREAS, the success of these meetings has resulted mainly from the efforts of the officers of the respective sections; the Local Arrangements Committee representing the University of the South, composed of D. Bruce Conn, chairperson, John Bordley, Philip "Jack" Lorenz, Charles Peyser, Jr., D. Bran Potter, Jr., and Clay C. Ross, Jr.; and Program Chairman, Michael L. Daley; from the recognition given the meetings by the press, television, and radio stations; and from the generous hospitality of the host institution, the University of the South, its Provost, Dr. Frederick H. Croom, and its Dean of Arts and Sciences, Dr. Robert L. Keele;

BE IT RESOLVED, therefore, that the Tennessee Academy of Science expresses its sincere appreciation to these and all others who contributed to the success of these meetings."

President Kesler announced that Rhodes College and The University of the South are new institutional members. A membership directory is being prepared for the World Wide Web TAS Home Page. Members are encouraged to complete permission forms to be included.

A newly formed Education Committee, approved by the Executive Committee, will consider science education issues. Bernard Benson, The University of Tennessee at Chattanooga, will chair the committee.

President Kesler announced that the 1997 TAS annual meeting will be held on the campus of Motlow State Community College, Tullahoma. He expressed thanks to the Executive Committee for its work and support in 1996. A plaque was presented to Past President Diane Nelson with praise for her long term of loyalty and service to TAS as well as her recent service as President. President Kesler then passed the gavel to 1997 President Michael L. Daley who adjourned the meeting at 9:20 AM CST.